

IN THE CLAIMS:

The text of all pending claims, (including withdrawn claims) is set forth below. Cancelled and not entered claims are indicated with claim number and status only. The claims as listed below show added text with underlining and deleted text with ~~strike through~~. The status of each claim is indicated with one of (ORIGINAL), (CURRENTLY AMENDED), (CANCELLED), (WITHDRAWN), (NEW), (PREVIOUSLY PRESENTED), or (NOT ENTERED).

Please CANCEL claims 2 and 32 without prejudice or disclaimer and AMEND claims 1, 3, 4, 5, 9, 15, 18, 22, 25, 28, and 29 and in accordance with the following:

1. (CURRENTLY AMENDED) A fusing roller of an image forming apparatus comprising:

- an outer metallic pipe;
- an inner metallic pipe disposed inside the outer metallic pipe;
- a resistance heating body disposed between the outer and the inner metallic pipes, generating a resistance heat ;
- an outer insulator interposed between the resistance heating body and the outer metallic pipe to transmit the resistance heat to the outer metallic pipe ; and
- an inner insulator disposed between the resistance heating body and the inner metallic pipe, wherein:

the outer insulator has a higher thermal conductivity than that of the inner insulator, and the outer insulator comprises a first insulating sheet and a second insulating sheet that are layered from an outer side of the resistance heating body with a predetermined thickness.

2. (CANCELLED)

3. (CURRENTLY AMENDED) The fusing roller of the image forming apparatus of claim-2, 1, wherein the first and the second insulating sheets are mica sheets comprised of an artificial mica and a silicone adhesive.

4. (CURRENTLY AMENDED) The fusing roller of the image forming apparatus of claim-2, 1, wherein the first and the second insulating sheets are formed with approximately the same thickness.

5. (CURRENTLY AMENDED) The fusing roller of the image forming apparatus of

claim-2_1, wherein the outer insulator further includes a resin film between the second insulating sheet and the outer metallic pipe.

6. (ORIGINAL) The fusing roller of the image forming apparatus of claim 5, wherein the resin film is a heat resisting polyimide film.

7. (ORIGINAL) The fusing roller of the image forming apparatus of claim 5, wherein the resin film is thinner than the first and the second insulating sheets.

8. (ORIGINAL) The fusing roller of the image forming apparatus of claim 5, wherein the resin film is approximately 25 μ m in thickness.

9. (CURRENTLY AMENDED) The A fusing roller of the an image forming apparatus ~~of claim 1, wherein~~ comprising:

an outer metallic pipe;

an inner metallic pipe disposed inside the outer metallic pipe;

a resistance heating body disposed between the outer and the inner metallic pipes,

generating a resistance heat ;

an outer insulator interposed between the resistance heating body and the outer metallic pipe to transmit the resistance heat to the outer metallic pipe ; and

an inner insulator disposed between the resistance heating body and the inner metallic pipe, wherein:

the outer insulator has a higher thermal conductivity than that of the inner insulator, and

the inner insulator includes a first insulating sheet, a second insulating sheet, and a third insulating sheet that are consecutively layered from the resistance heating body toward the inner metallic pipe with a predetermined thickness.

10. (ORIGINAL) The fusing roller of the image forming apparatus of claim 9, wherein the first, the second, and the third insulating sheets are mica sheets that have approximately the same thickness.

11. (ORIGINAL) The fusing roller of the image forming apparatus of claim 9, wherein the first, the second, and the third insulating sheets are respectively thicker than the resistance heating body.

12. (ORIGINAL) The fusing roller of the image forming apparatus of claim 5, wherein the inner insulator includes a third insulating sheet, a fourth insulating sheet, and a fifth insulating sheet that are consecutively layered from the resistance heating body toward the inner metallic pipe.

13. (ORIGINAL) The fusing roller of the image forming apparatus of claim 12, wherein the third, the fourth, and the fifth insulating sheets are respectively 0.1mm to 0.2mm in thickness and have a withstand voltage of 3.0kV or greater.

14. (PREVIOUSLY PRESENTED) The fusing roller of the image forming apparatus of claim 5, wherein the first and the second insulating sheets are respectively 0.1mm to 0.2mm in thickness and have a withstand voltage of 3.0kV or greater, and the resin film has a thickness of approximately 25 μ m.

15. (CURRENTLY AMENDED) ~~The~~ A fusing roller of the ~~an~~ image forming apparatus of claim 1, wherein comprising:

an outer metallic pipe;

an inner metallic pipe disposed inside the outer metallic pipe;

a resistance heating body disposed between the outer and the inner metallic pipes,

generating a resistance heat ;

an outer insulator interposed between the resistance heating body and the outer metallic pipe to transmit the resistance heat to the outer metallic pipe ; and

an inner insulator disposed between the resistance heating body and the inner metallic pipe, wherein:

the outer insulator has a higher thermal conductivity than that of the inner insulator, and

the outer metallic pipe is coated with a synthetic resin so that a coating layer is formed around an outer circumference of the outer metallic pipe.

16. (PREVIOUSLY PRESENTED) The fusing roller of the image forming apparatus of claim 15, wherein the coating layer is made of a fluoropolymer resin.

17. (ORIGINAL) The fusing roller of the image forming apparatus of claim 15, wherein the outer metallic pipe is approximately 1.0mm in thickness, and the coating layer is

approximately 30 μ m in thickness.

18. (CURRENTLY AMENDED) The fusing roller of the image forming apparatus of claim-2_1, further comprising a thermally conductive material disposed between the first and the second insulating sheets.

19. (ORIGINAL) The fusing roller of the image forming apparatus of claim 18, wherein the thermally conductive material is a thermal grease.

20. (ORIGINAL) The fusing roller of the image forming apparatus of claim 9, further comprising a thermally conductive material disposed between the first, the second, and the third insulating sheets .

21. (ORIGINAL) The fusing roller of the image forming apparatus of claim 20, wherein the thermally conductive material is a thermal grease.

22. (CURRENTLY AMENDED) ~~The~~ A fusing roller of ~~the~~ an image forming apparatus of claim 1, further comprising:

an outer metallic pipe;

an inner metallic pipe disposed inside the outer metallic pipe;

a resistance heating body disposed between the outer and the inner metallic pipes, generating a resistance heat ;

an outer insulator interposed between the resistance heating body and the outer metallic pipe to transmit the resistance heat to the outer metallic pipe ;

an inner insulator disposed between the resistance heating body and the inner metallic pipe, wherein the outer insulator has a higher thermal conductivity than that of the inner insulator, and

an end cap and a gear cap respectively connected to both ends of the outer metallic pipe and electrically connected to the resistance heating body.

23. (ORIGINAL) The fusing roller of the image forming apparatus of claim 22, wherein at least one of the end cap and gear cap is provided with a terminal supplying an AC voltage to the resistance heating body.

24. (ORIGINAL) The fusing roller of the image forming apparatus of claim 22, further comprising an air vent in the end cap, preventing an expansion of the inner metallic pipe due to air pressure in the inner metallic pipe.

25. (CURRENTLY AMENDED) ~~The~~ A fusing roller of ~~the~~ an image forming apparatus of ~~claim 1~~, further comprising:

an outer metallic pipe;

an inner metallic pipe disposed inside the outer metallic pipe;

a resistance heating body disposed between the outer and the inner metallic pipes,
generating a resistance heat ;

an outer insulator interposed between the resistance heating body and the outer metallic pipe to transmit the resistance heat to the outer metallic pipe ;

an inner insulator disposed between the resistance heating body and the inner metallic pipe, wherein the outer insulator has a higher thermal conductivity than that of the inner insulator, and

a resin film between the outer insulator and the outer metallic pipe.

26. (ORIGINAL) The fusing roller of the image forming apparatus of claim 25, wherein the resin film is a heat resisting polyimide film.

27. (ORIGINAL) The fusing roller of the image forming apparatus of claim 1, wherein at least one of the outer and inner metallic pipes is further comprised of aluminum.

28. (CURRENTLY AMENDED) ~~The~~ A fusing roller of ~~the~~ an image forming apparatus of ~~claim 1~~, wherein comprising:

an outer metallic pipe;

an inner metallic pipe disposed inside the outer metallic pipe;

a resistance heating body disposed between the outer and the inner metallic pipes,
generating a resistance heat ;

an outer insulator interposed between the resistance heating body and the outer metallic pipe to transmit the resistance heat to the outer metallic pipe ; and

an inner insulator disposed between the resistance heating body and the inner metallic pipe, wherein:

the outer insulator has a higher thermal conductivity than that of the inner insulator, and

the thickness of the inner metallic pipe is approximately half the thickness of the outer metallic pipe.

29. (CURRENTLY AMENDED) ~~The~~ A fusing roller of ~~the~~ an image forming apparatus of claim 1, wherein comprising:

an outer metallic pipe;

an inner metallic pipe disposed inside the outer metallic pipe;

a resistance heating body disposed between the outer and the inner metallic pipes,

generating a resistance heat ;

an outer insulator interposed between the resistance heating body and the outer metallic pipe to transmit the resistance heat to the outer metallic pipe ; and

an inner insulator disposed between the resistance heating body and the inner metallic pipe, wherein:

the outer insulator has a higher thermal conductivity than that of the inner insulator, and the resistance heating body is comprised of either a nickel-chrome or a ferro-chrome.

30. (ORIGINAL) The fusing roller of the image forming apparatus of claim 1, wherein the resistance heating body is approximately 0.1mm in thickness.

31. (PREVIOUSLY PRESENTED) A fusing roller of an image forming apparatus comprising:

an outer metallic pipe;

an inner metallic pipe disposed inside the outer metallic pipe;

a resistance heating body disposed between the outer and the inner metallic pipes,

generating a resistance heat;

an outer insulator interposed between the resistance heating body and the outer metallic pipe to transmit the resistance heat to the outer metallic pipe, wherein the outer insulator comprises a first insulating sheet and a second insulating sheet that are layered from an outer side of the resistance heating body with a predetermined thickness; and

an inner insulator disposed between the resistance heating body and the inner metallic pipe, wherein the inner insulator is thicker than the outer insulator.

32. (CANCELLED)

33. (PREVIOUSLY PRESENTED) A fusing roller of an image forming apparatus comprising:

- an outer metallic pipe;
- an inner metallic pipe disposed inside the outer metallic pipe;
- a resistance heating body disposed between the outer and the inner metallic pipes, generating a resistance heat;
- an outer insulator interposed between the resistance heating body and the outer metallic pipe to transmit the resistance heat to the outer metallic pipe;
- an inner insulator disposed between the resistance heating body and the inner metallic pipe, wherein the inner insulator is thicker than the outer insulator; and
- a resin film between the outer insulator and the outer metallic pipe.

34. (PREVIOUSLY PRESENTED) A fusing roller of an image forming apparatus comprising:

- an outer metallic pipe;
- an inner metallic pipe disposed inside the outer metallic pipe;
- a resistance heating body disposed between the outer and the inner metallic pipes, generating a resistance heat;
- an outer insulator interposed between the resistance heating body and the outer metallic pipe to transmit the resistance heat to the outer metallic pipe; and
- an inner insulator disposed between the resistance heating body and the inner metallic pipe, wherein:
 - the inner insulator is thicker than the outer insulator, and
 - the inner insulator includes a first insulating sheet, a second insulating sheet, and a third insulating sheet that are consecutively layered from the resistance heating body toward the inner metallic pipe with a predetermined thickness.

35. (ORIGINAL) The fusing roller of the image forming apparatus of claim 31, wherein the outer metallic pipe is coated with a synthetic resin so that a coating layer is formed around an outer circumference of the outer metallic pipe.

36. (ORIGINAL) The fusing roller of the image forming apparatus of claim 31, further comprising an end cap and a gear cap respectively connected to both ends of the outer metallic

pipe and electrically connected to the resistance heating body.

37. (PREVIOUSLY PRESENTED) A fusing roller of an image forming apparatus comprising:

- an outer metallic pipe;
- an inner metallic pipe disposed inside the outer metallic pipe;
- a resistance heating body disposed between the outer and the inner metallic pipes, generating a resistance heat;
- an outer insulator interposed between the resistance heating body and the outer metallic pipe to transmit the resistance heat to the outer metallic pipe; and
- an inner insulator disposed between the resistance heating body and the inner metallic pipe, wherein:
 - the inner insulator is thicker than the outer insulator, and
 - the thickness of the inner metallic pipe is approximately half the thickness of the outer metallic pipe.

38. (ORIGINAL) The fusing roller of the image forming apparatus of claim 31, wherein the resistance heating body is approximately 0.1mm in thickness.

39. (PREVIOUSLY PRESENTED) The fusing roller of the image forming apparatus of claim 33, wherein the outer metallic pipe is coated with a synthetic resin so that a coating layer is formed around an outer circumference of the outer metallic pipe.

40. (PREVIOUSLY PRESENTED) The fusing roller of the image forming apparatus of claim 33, further comprising an end cap and a gear cap respectively connected to both ends of the outer metallic pipe and electrically connected to the resistance heating body.

41. (PREVIOUSLY PRESENTED) The fusing roller of the image forming apparatus of claim 33, wherein the resistance heating body is approximately 0.1mm in thickness.

42. (PREVIOUSLY PRESENTED) The fusing roller of the image forming apparatus of claim 34, wherein the outer metallic pipe is coated with a synthetic resin so that a coating layer is formed around an outer circumference of the outer metallic pipe.

43. (PREVIOUSLY PRESENTED) The fusing roller of the image forming apparatus of claim 34, further comprising an end cap and a gear cap respectively connected to both ends of the outer metallic pipe and electrically connected to the resistance heating body.

44. (PREVIOUSLY PRESENTED) The fusing roller of the image forming apparatus of claim 34, wherein the resistance heating body is approximately 0.1mm in thickness.

45. (PREVIOUSLY PRESENTED) The fusing roller of the image forming apparatus of claim 37, wherein the outer metallic pipe is coated with a synthetic resin so that a coating layer is formed around an outer circumference of the outer metallic pipe.

46. (PREVIOUSLY PRESENTED) The fusing roller of the image forming apparatus of claim 37, further comprising an end cap and a gear cap respectively connected to both ends of the outer metallic pipe and electrically connected to the resistance heating body.

47. (PREVIOUSLY PRESENTED) The fusing roller of the image forming apparatus of claim 37, wherein the resistance heating body is approximately 0.1mm in thickness.